DOCUMENT RESUME

ED 317 613 TM 014 730

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TITLE Adapting Instruments for Use in Other Cultures.
PUB DATE 89
NOTE 10p.
PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adults; *Career Planning; College Students; Comparative Testing; Cross Cultural Studies; *Culture Fair Tests; *Elementary School Students; English; Field Tests; Foreign Countries; French; Interest Inventories; Occupational Tests; *Secondary School Students; Spanish; *Test Construction; Testing Problems; Test Reliability; Test Validity
IDENTIFIERS Australia; Canada; *Career Decision Making System; *Test Adaptations; United States

ABSTRACT

The field testing process for the collection of data on the norms, reliability, and concurrent validity of the Career Decision-Making System (CDM) is described. The CDM is a comprehensive career planning instrument that surveys interests, values, abilities, and training plans and relates them to career information in client-oriented interpretive materials. There are five CDM versions: (1) United States English; (2) United States Spanish; (3) Canadian English; (4) Canadian French; and (5) Australian. The first step in the translation and adaptation process involved a local consultant's screening of the original assessment booklet and making any necessary changes. The second step was identification of tryout samples judged by a local consultant as typical. Testing of the Spanish CDM first involved 267 Hispanic high school students in the United States, with further testing with 648 Spanish-speaking junior high school and college students in Puerto Rico, California, Texas, and Massachusetts. The French translation was tested with 159 students in grades 8 and 9, and 342 students in grades 10 through 12. Canadian English and Australian CDM forms required less revision and testing, although adaptation of occupational classifications was necessary. Results for 1,387 workers in different occupations show support in general for the generalizability of occupational classification systems and the similarity of interest profiles of people performing the same job in different countries. Three tables present data from the studies. (SLD)

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Adapting Instruments For Use In Other Cultures

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This paper will describe the field testing process for the collection of data, e.g., norms, reliability, and concurrent validity of the Career Decision-Making System (CDM). There are five CDM versions: United States English and Spanish, Canadian English and French, and Australian. The CDM is a comprehensive career planning instrument that surveys interests, values, abilities, and training plans and relates them to extensive career information in client-oriented interpretive materials. The first step in the translation and adaptation process used by the authors of these editions involved a local consultant's examination of the content of the original survey assessment booklet for its appropriateness in the new setting. Immediate changes were made if grossly needed. The second step was the identification of tryout samples ajudged by a local consultant(s) to be typical. These steps occurred prior to norming. One successful process was to identify a local group of consultants who served as a committee in these steps.

The data presented here were collected at different times: the Spanish in 1979; Canadian English-speaking in 1983; Canadian French-speaking in 1984; and Australian in 1987. Published adaptations of the actual instruments were done more recently. Since this paper is a complementary one to Arthur O'Shea's which describes the establishment of the instrument's construct validity, I will not include certain data here. Only selected portions of the adaptation process for each CDM edition will be presented so maximum exposure to the issues can be covered.

Translation and Adaptation Process

In each CDM translation and adaptation exact equivalent expressions (literal translations) were not used where more widely understood ones better conveyed the original meaning. Concrete terms were given preference to abstract ones. Field testing in the diverse United States Spanish-speaking cultures, for example, Chicano, Puerto Rican, Cuban, and South American, were critical to minimize the use of words or phrases that might be inappropriate in one or more of the cultures. Translators who were fluent in both languages were always used.

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The fact that the Spanish and French languages have both masculine and feminine occupational titles posed an especially difficult translation problem. In the United States, the government prohibits discrimination in hiring on the basis of sex. Guidelines specify the use of gender neutral occupational titles, for example, fisher instead of fisherman. The Canadian and Australian governments also address this issue. It must be remembered that a primary purpose of interest inventories is to promote an open consideration of all career options. Thus, whenever possible, an occupational title for each sex was used, for example, un medico/una medica. This procedure calls attention to the problem of sex stereotyping of jobs and emphasizes that no job is closed to one sex or the other unless it is by cultural tradition. Some job titles have only a single form for both masculine and feminine, for example, in Spanish novelista. In such a case, care had to be taken to have modifiers and verbs, where applicable, agree in terms of both genders.

Despite the attention given to translations and adaptations, it was truly the field testing which was done for all versions that indicated problematic idioms, geographic variations, and readability. During field testing, subjects were asked to underline words and phrases they did not understand. This methodology provided the basis for thorough content analyses by language. At all times criteria for the final wording was readability, elimination of material reflecting regional and cultural differences, and reduction of sex stereotyping inherent in some of the language forms of occupational titles.

Spanish Translation

After its translation the Spanish CDM required three steps in its translation to its published form. The initial translation was administered to four Hispanic high school samples in Texas and Massachusetts: Puerto Ricans (64), Cubans (26), Chicanos (148), and South Americans (28). The students were asked to underline words and phrases that they did not understand. This provided the basis for a thorough content analysis to identify language problems with items and directions common to all groups and those unique to one or more cultures. Hispanic consultants with experience in career education and guidance and the CDM's authors used these data to refine the translation. The coefficients of internal consistency for the six Spanish CDM scales ranged from .85 to .89. For a comparable English-speaking age group of 9,650 students, the range was from .89 to .94. The CDM scale means and standard deviations for this first tryout group are presented in Table 1.

The revised translation was field tested again with 648 junior high, high school, and college students in Puerto Rico, California, Texas, and Massachusetts. Survey takers again were asked to underline words and phrases with which they had difficulty. A relatively small number of problematic wordings were discovered. The final version of the Spanish form was determined by the translation consultants. The CDM scale means and standard deviations using the revised form and more diverse samples are presented in Table 2. Expected gender differences are observed where males were more interested in crafts jobs than females and females were more interested in social activities than males. Substantial differences were not observed on the other four scales.

The two tables show sampling effect occurs. Note in Table 1 which was with high school students, the females expressed a slight preference for scientific over clerical interests. The female mean score of the Spanish-speaking sample also reflected a stronger interest in business activities than the mean for females in the English language CDM normative sample. The average scale scores for males were almost equal on the six scales. In conclusion, in addition to the specific issue being studied, the social context also needs to be considered as Fouad, Cudeck, and Hansen (1984) wrote:

> Vocational counselors need to be alert to the discrepancy between the view held by the majority culture and the reality that many Hispanic students face: discrimination, frustration with the educational system, and unrealistic aspirations (too high or too low). Also for many Hispanic girls, a sharp contrast occurs between their aspirations and their current role models.

French Translation

The French language Canadian CDM is an exact translation of the English language Canadian CDM. Employment and Immigration Canada publishes all its occupational titles in both French and English, which made the translation somewhat easier. Care was taken throughout the CDM to eliminate sex-specific pronouns "il" and "elle". After an original translation by a faculty member of the College Communautaire de Grand-Sault and field testing, the final version was put into its present form by the Ontario Institute For Studies In Education in1989.

When the Canadian English language group mean scale scores were compared to their counterparts in the U.S., the mean scale scores between the two groups were almost identical. The mean for grades seven through nine of the U.S. sample of 4,004 was 12.8 with a SD of 10.1; for the Canadian sample of 740 the mean was 12.0 with a SD of 10.1. The mean for grades 10 through 12 for the U.S. sample of 5,646 was 14.0 with a SD of 10.8; for the Canadian sample of 803 the mean was 14.1 with a SD of 10.9. The group means of the French-speaking Canadians were somewhat lower than the English-speaking Canadians. The mean of the six scale scores for 159 grades eight and nine students was 13.0 with a SD of 9.9 and for 342 grades 10 through 12 students the mean was 13.3 with a SD of 9.8

It was noted that differences in "self" stated occupational preferences between English and French language Canadian youths did exist. The French language females' strongest preference was for clerical work and for males, work in the skilled trades and manual type employment. The English language females' strongest preference was for social service work and males preferred to work in the math-science area. Technical work was an interest area of about equal preference for both the English and French language males.

As was true in the U.S., Canadian youths' mean scores on all scales for both males and females tended to rise with age. Older adolescents appear to have experienced a broadening of their interests. Male interests were more evenly distributed over the six scales, whereas female interests at every grade level centered more on the social while reflecting an aversion to an interest in crafts. Stated occupational preferences tended to parallel those found in the U.S. with very few females interested in the trades, math or science and with few males choosing education, literary work or clerical work. Very few male or female youths indicated an interest in sales, a career area that employs large numbers of people. This also was true of American youths. Value and ability self-concepts of Canadian youths were quite congruent with youths in the U.S.

Canadian and Australian Adaptations

The focus in translating the CDM into Spanish was adapting the language to the technical terminology inherent in the U.S. job titles and keeping the interest experiences relevant to the diverse U.S. Spanish subcultural groups studied. Whereas the Spanish translation was a cross-cultural adaptation within the same country, that is, for Spanish-speaking Americans, the two adaptations required the the examination of job descriptions of two other nations. Both the Canadian and Australian

editions of the CDM closely parallel the earlier U.S. edition in format. The major changes were in the career information sections of the system. The Canadian Classification and Dictionary of Occupations (CCDO) and the Australian Standard Classification of Occupations (ASCO) have replaced the Dictionary of Occupational Titles (U.S. Department of Labor, 1977) and the Guide For Occupational Exploration (U.S. Department of Labor, 1979) in the organization of information. In addition, both editions employ the local spellings and job titles. Minor changes were made in the job listings to reflect more accurately where most Canadians and Australians work. In the Canadian and Australian editions, the primary focus was to adapt the CDM to the structure of the Canadian and Australian classifications of occupations. This required the authors to assign a Holland code for each job in the 81 CCDO and 52 ASCO Minor groups. Both the Canadian and Australian governments have published a Holland code for every job in their occupational disctionaries. The authors examined the assigned codes by Minor groups as to similarity of codes and they formulated a consensus code for each Minor group. Then they placed the Minor groups of jobs into the career clusters where their equivalent U.S. job title was located. A few subdivisions of Minor groups, that is, Unit groups, had to be assigned to different clusters since a Minor group contained a distinctive grouping of different Holland codes. However, it was not found necessary to abandon the original U.S. 18 career clusters for either the Canadian or Australian CDM. There is a similarity between Canadian, Australian, and American occupational structures. Further research would be needed to test the generalizability of this study's findings to the occupational structures of other countries.

Validity

Establishing concurrent validity is a crucial issue for an interest inventory. Table 3 reports CDM results of workers for typical jobs in the United States and Australia. Average RIASEC codes received on the CDM are presented along with Dictionary of Holland Occupational Codes (HOC) (Gottfredson et al, 1989) and Australian Standard Classification of Occupations (ASCO) codes for each occupation. An inspection of the table shows that there is a high degree of agreement between the codes. The first letter is the same for 88 percent or 30 of the 34 occupations between CDM and HOC codes. The first and second letters are in the exact order in one-half of the samples. Of the four instances in which a match did not occur in the first letter, one might legitimately question whether Flight Attendant is more a business social than a social artistic type job. In two technical jobs, Electronic Technician and Mechanical Drafter, the first two letters were juxtaposed. Having discussed their codes (RIS) with the dairy farmers,

they agreed that watching the market price of milk was important. However, they emphatically informed me that they carefully monitor their animals' physical health, applying medical treatment when needed and that they try to avoid frequent calls for the veterinarian. Between the CDM and ASCO codes, 86 percent or 18 of 21 first letters were the same. In the other three samples, the first CDM letter was included in the ASCO code. The first and second letters were in the exact order in 53 percent or 11 of the 21 samples.

Table 3 also includes samples of those workers in the same or similar occupations. The U.S. and Australian Engineers' codes were identical. It is very logical for the Technical Editors to be more scientifically oriented than Textbook Editors. Notice that for the four samples of office workers, the first two code letters are identical. In field-based research the third letter is either accidental to the sample of people tested or uniquely specific to the organization in which the people work.

Conclusion

Richard Bolles (1989) wrote:

> Much of the work of counseling, particularly when you are dealing with different cultures and so on, is a work of translation. What often happens to career counselors is that they become intent on the translation prematurely. It becomes their first order of business and it should not. The first order of business ought to be to master the subject matter and the concepts in their own language so they understand it for their own life.

To this end, some studies were presented to better understand how tests are adapted to other cultures. Hopefully the results show support in general for one theoretical orientation; the generalizability of occupational classification systems; and the similarity of interest profiles of people performing the same job in different nations. While real differences do exist among people from various cultures and countries, perhaps many more commonalities exist. If this is so, the focus on identification and understanding of the fewer unique differences may make the task of those persons who work with multi-cultural groups easier. The ability to use theory and some strategies with which we are skilled makes the task less overwhelming for those helping persons who increasingly must serve diverse populations.

Table 1

Mean Scores of the First Tryout Spanish Version

Scale	Males (N=96) M	SD	Females (N=171) M	SD
Crafts	16.2	9.8	8.0	7.9
Scientific	16.8	11.2	15.3	11.3
The Arts	15.1	10.9	17.2	10.7
Social	14.8	11.1	22.7	10.5
Business	14.0	10.8	18.0	10.1
Clerical	14.8	11.2	14.9	12.2

Table 2

Mean Scores for the Revised Spanish Translation

Scale	Males (N=360) M	SD	Females (N=288) M	SD
Crafts	13.6	9.6	5.0	6.5
Scientific	22.6	11.1	17.3	12.3
The Arts	12.7	9.1	13.8	10.1
Social	14.8	9.4	21.6	9.8
Business	15.0	9.7	13.2	9.6
Clerical	15.6	10.1	18.4	11.4

Table 3

Obtained CDM Codes For United States and Australian Occupational Groups

Occupation	N	CDM	HOC	ASCO	Occupation	N	CDM	HOC	ASCO
Toolmaker	14	RIS	RIE	RI	Firefighter(A)	40	RIS	RES	RS
Electronic Technician(US)	31	RIE	IRE	-	Telecom Technician(A)	24	RIS	RES	RI
Mechanical Drafter(US)	47	RIA	IRE	-	Dairy Farmer(A)	29	RIS	ESR	RCE
Engineering Drafter(A)	17	IRS	IRE	IRC	Biochemist(A)	30	ISR	IRS	IRC
Electrical Engineer(US)	49	IRE	IRE	-	Electrical Engineer(A)	90	IRE	IRE	IRC
Computer Programmer(US)	31	IAR	IRE/ IEC	-	Systems Analyst(A)	37	IEC	IER	IRC
Manager, Engineer(A)	36	IER	IES	ERI	Med Lab Technician(A)	26	ISE	IRE	RIC
Editor, Tech. Books(A)	17	AIS	ASE	AIS	Editor, Textbooks(US)	41	ASI	AES	-
Teacher(US)	112	SAE	SEC/ SAE	-	Teacher(A)	28	SAE	SEC/ SAE	SAI SEC
Ambulance Attendant(A)	45	SRI	SEC	SRI	Flight Attendant(A)	28	SAI	ESA	SC
Counselor(US)	40	SAE	SAE	-	Counselor(A)	28	SAE	SAE	SEA
Nurse(US)	37	SAI	SIA	-	Nurse(A)	67	SAI	SIA	SIR
Police Recruit(A)	50	SIRE	SER	RSI	Educ. Administrator(US)	35	SAE	SEI	-
Management Trainee(A)	34	ESC	ESR	ESC	Technical Manager(US)	33	ERI	ESR	-
Salesperson(US)	54	ESA	ESA	-	Retail Salesperson(A)	65	ESC	ESA	ESR
Accounting Clerk(A)	25	CSI	CSR	CSI	Clerk, General(US)	36	CSE	CSE	-
Postal Clerk(A)	49	CSE	CSE	CSR	Secretary(US)	42	CSA	CSE	-

(US) = United States (A) = Australian - = Scores are tied

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